

Restriction Requirement

The Office Action asserts that the application contains the following groups of inventions:

- I. Claims 1, 12-17 and 18 (in part), drawn to a fluorescent protein of SEQ ID NO:1 and its variant thereof having equivalent fluorescence properties; a fluorescent reagent kit comprising said fluorescent protein, fusion protein comprising said fluorescent protein; and a method for analyzing the localization or dynamics of the fusion protein of claim 12 in a cell.
- II. Claim 2, drawn to a fluorescent protein of SEQ ID NO:3 and its variant thereof having equivalent fluorescence properties.
- III. Claim 2, drawn to a fluorescent protein of SEQ ID NO:5 and its variant thereof having equivalent fluorescence properties.
- IV. Claim 2, drawn to a fluorescent protein of SEQ ID NO:7 and its variant thereof having equivalent fluorescence properties.
- V. Claim 2, drawn to a fluorescent protein of SEQ ID NO:9 and its variant thereof having equivalent fluorescence properties.
- VI. Claim 3, drawn to a fluorescent protein of SEQ ID NO:11 and its variant thereof having equivalent fluorescence properties.
- VII. Claim 3, drawn to a fluorescent protein of SEQ ID NO:13 and its variant thereof having equivalent fluorescence properties.
- VIII. Claim 3, drawn to a fluorescent protein of SEQ ID NO:15 and its variant thereof having equivalent fluorescence properties.
- IX. Claim 3, drawn to a fluorescent protein of SEQ ID NO:17 and its variant thereof having equivalent fluorescence properties.
- X. Claim 3, drawn to a fluorescent protein of SEQ ID NO:19 and its variant thereof having equivalent fluorescence properties.
- XI. Claim 3, drawn to a fluorescent protein of SEQ ID NO:21 and its variant thereof having equivalent fluorescence properties.
- XII. Claim 3, drawn to a fluorescent protein of SEQ ID NO:23 and its variant thereof having equivalent fluorescence properties.

- XIII. Claim 3, drawn to a fluorescent protein of SEQ ID NO:25 and its variant thereof having equivalent fluorescence properties.
- XIV. Claim 3, drawn to a fluorescent protein of SEQ ID NO:27 and its variant thereof having equivalent fluorescence properties.
- XV. Claim 3, drawn to a fluorescent protein of SEQ ID NO:29 and its variant thereof having equivalent fluorescence properties.
- XVI. Claim 4, 7, 10-11 and 18 (in part), drawn to DNA encoding a fluorescent protein of SEQ ID NO:1 and its variant thereof having equivalent fluorescence properties; a fluorescent reagent kit comprising said DNA, vector thereof and host thereof comprising said DNA.
- XVII. Claim 5 and 8, drawn to DNA encoding a fluorescent protein of SEQ ID NO:3 and its variant thereof having equivalent fluorescence properties.
- XVIII. Claim 5 and 8, drawn to DNA encoding a fluorescent protein of SEQ ID NO:5 and its variant thereof having equivalent fluorescence properties.
- XIX. Claim 5 and 8, drawn to DNA encoding a fluorescent protein of SEQ ID NO:7 and its variant thereof having equivalent fluorescence properties.
- XX. Claim 5 and 8, drawn to DNA encoding a fluorescent protein of SEQ ID NO:9 and its variant thereof having equivalent fluorescence properties.
- XXI. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:11 and its variant thereof having equivalent fluorescence properties.
- XXII. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:13 and its variant thereof having equivalent fluorescence properties.
- XXIII. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:15 and its variant thereof having equivalent fluorescence properties.
- XXIV. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:17 and its variant thereof having equivalent fluorescence properties.
- XXV. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:19 and its variant thereof having equivalent fluorescence properties.
- XXVI. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:21 and its variant thereof having equivalent fluorescence properties.
- XXVII. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:23 and its variant thereof having equivalent fluorescence properties.

- XXVIII. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:25 and its variant thereof having equivalent fluorescence properties.
- XXIX. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:27 and its variant thereof having equivalent fluorescence properties.
- XXX. Claim 6 and 9, drawn to DNA encoding a fluorescent protein of SEQ ID NO:29 and its variant thereof having equivalent fluorescence properties.
- XXXI. Claims 19, 30-34 and 36 (in part), drawn to a chromoprotein of SEQ ID NO:37 and its variant thereof which has light absorbing properties; and a reagent kit comprising said chromoprotein protein or a fusion protein thereof.
- XXXII. Claim 20, drawn to a fluorescent protein of SEQ ID NO:39 and its variant thereof having equivalent fluorescence properties.
- XXXIII. Claim 21, drawn to a fluorescent protein of SEQ ID NO:41 and its variant thereof having stokes shift of 100 nm or greater.
- XXXIV. Claim 21, drawn to a fluorescent protein of SEQ ID NO:43 and its variant thereof having stokes shift of 100 nm or greater.
- XXXV. Claim 21, drawn to a fluorescent protein of SEQ ID NO:45 and its variant thereof having stokes shift of 100 nm or greater.
- XXXVI. Claim 21, drawn to a fluorescent protein of SEQ ID NO:47 and its variant thereof having stokes shift of 100 nm or greater.
- XXXVII. Claim 22, 25, 28, 29 and 36 (in part), drawn to DNA encoding a chromoprotein of SEQ ID NO:37 and its variant thereof which has light absorbing properties; and a reagent kit comprising said DNA, vector thereof and host cell thereof.
- XXXVIII. Claim 23 and 26, drawn to DNA encoding a fluorescent protein of SEQ ID NO:39 and its variant thereof having fluorescent property.
- XXXIX. Claims 24 and 27, drawn to DNA encoding a fluorescent protein of SEQ ID NO: 41 and its variant thereof having stokes shift of 100 nm or greater.
- XL. Claims 24 and 27, drawn to DNA encoding a fluorescent protein of SEQ ID NO: 43 and its variant thereof having stokes shift of 100 nm or greater.
- XLI. Claims 24 and 27, drawn to DNA encoding a fluorescent protein of SEQ ID NO: 45 and its variant thereof having stokes shift of 100 nm or greater.
- XLII. Claims 24 and 27, drawn to DNA encoding a fluorescent protein of SEQ ID NO: 47 and its variant thereof having stokes shift of 100 nm or greater.

XLIII. Claim 35, drawn to a method for analyzing the localization or dynamics of the fusion protein of claim 30 in a cell.

Election

In response to the Restriction Requirement, Applicants elect *with traverse* the invention set forth in Group XVI, claims 4, 7, 10-11, and 18 (in part). Applicants note that the present application is a National Stage application submitted under 35 U.S.C. § 371, and thus, Unity of Invention practice governs the issuance of any Restriction Requirement.

Applicants' traversal is based upon the fact that Group XVI shares a common special technical feature, at least with respect to Groups XVII – XX and Groups XXI – XXX. All of the aforementioned groups relate to DNAs encoding a Kusabira-Orange fluorescent protein of a monomer and having high homology with each other. Thus, the special technical feature that Group XVI shares with Groups XVII – XX and Groups XXI – XXX is (at least) DNAs encoding Kusabira-Orange fluorescent protein of a monomer. In addition, another special technical feature these groups share is a high degree of homology with regard to their nucleotide sequences. Applicants attach hereto a table for the Examiner's convenience, showing features of these Groups, which will allow for an easy determination that unity of invention is satisfied.

Applicants note that a special technical feature is, essentially, that feature recited that is shared by the claims and that separates the claimed invention from the prior art. As noted, Group XVI, Groups XVII – XX, and Groups XXI – XXX share the features of being DNAs encoding monomeric Kusabira-Orange fluorescent protein with a high degree of sequence homology. Applicants respectfully submit that unity of invention is satisfied with respect to these Groups and respectfully request withdrawal of the Restriction with respect to these Groups.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
Atsushi Miyawaki et al.


Bruce H. Bernstein
Reg. No. 29,027 42,920

July 16, 2009
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

Enclosure: Table showing relationship between Groups

Group No.	SEQ ID		Excitation (Absorption) wavelength	Fluorescent wavelength	Species	Remarks	Homology	
	NO (amino acid)	SEQ ID (DNA)					With mKO (DNA)	With Keima616 (DNA)
	Name							
XVI	1	2	mKO	548	559	Fungia sp.	Orange	
							Large stokes shift (difference of excitation wavelength and fluorescent wavelength)	
XVII	3	4	mKUV-1	398	505	Fungia sp	98.6%	
XVIII	5	6	mKUV-2	322	469	Fungia sp	98.6%	
XIX	7	8	mKO-FM32	493	506	Fungia sp	99.3%	
XX	9	10	mKO-F90	564	582	Fungia sp	98.6%	
XXI	11	12	mKO-FM9	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.7%
XXII	13	14	mKO-FM5	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.6%
XXIII	15	16	mKO-FM3	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.9%
XXIV	17	18	mKO-FM20	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.7%
XXV	19	20	mKO-FM24	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.9%
XXVI	21	22	mKO-FM14	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.6%
XXVII	23	24	mKO-FM19	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.9%
XXVIII	25	26	mKO-FM23	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.6%
XXIX	27	28	mKO-FM21	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.7%
XXX	29	30	mKO-FM25	500, 548	509, 560	Fungia sp	Green→orange over time (timer)	98.7%
XXXI	37	38	COCP	576	—	Montipora. sp	Chromo protein (Non fluorescent)	
XXXII	39	40	COCP-FL	560	600	Montipora. Sp	Red	
XXXIII	41	42	Keima616	440	616	Montipora. Sp	Large stokes shift (difference of excitation wavelength and fluorescent wavelength)	
XXXIV	43	44	Keima570	440	570	Montipora. Sp	Large stokes shift (difference of excitation wavelength and fluorescent wavelength)	99.0%
XXXV	45	46	cmKeima620	440	620	Montipora. Sp	Large stokes shift (difference of excitation wavelength and fluorescent wavelength)	97.8%
XXXVI	47	48	mKeima620	440	620	Montipora. sp	Large stokes shift (difference of excitation wavelength and fluorescent wavelength)	97.7%